

## Risk factors for recidivistic arson in adult offenders

Doley, Rebekah; Fineman, Kenneth; Fritzon, Katarina; Dolan, Mairead; McEwan, Troy E.

*Published in:*  
Psychiatry, Psychology and Law

*DOI:*  
[10.1080/13218719.2011.559155](https://doi.org/10.1080/13218719.2011.559155)

*Licence:*  
Unspecified

[Link to output in Bond University research repository.](#)

*Recommended citation(APA):*

Doley, R., Fineman, K., Fritzon, K., Dolan, M., & McEwan, T. E. (2011). Risk factors for recidivistic arson in adult offenders. *Psychiatry, Psychology and Law*, 18(3), 409-423. <https://doi.org/10.1080/13218719.2011.559155>

**General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

Risk Factors for Recidivistic Arson in Adult Offenders

Rebekah Doley

Humanities and Social Sciences, Psychology Department, Bond University

Kenneth Fineman

Department of Psychiatry and Human Behaviour, University of California, Irvine

Katarina Fritzson

Psychology Department, Humanities and Social Sciences, Bond University

Mairead Dolan

Centre for Forensic Behavioural Science, Monash University, and Victorian Institute of

Forensic Mental Health

Troy E. McEwan

Centre for Forensic Behavioural Science, Monash University, and Victorian Institute of

Forensic Mental Health

Correspondence should be directed to Dr Rebekah Doley, Department of Psychology, Faculty of Humanities and Sciences, Bond University, Gold Coast, Queensland, Australia 4229.

Email: [rdoley@bond.edu.au](mailto:rdoley@bond.edu.au)

### Abstract

This article reviews the current literature on known risk factors for recidivistic arson, with a particular focus on factors that could be used to differentiate serial from ‘one-off’ arson offenders. The relevance of risk factors for general reoffending to recidivistic arson is discussed, including the role of criminal history, mental illness, and sociodemographic factors. The specific roles of offence related affect, cognitions, and the offender’s interest in fire are considered, with recommendations for how theories from other areas of forensic psychology, such as the sex offender assessment and treatment literature, might be applied to the issue of deliberate fire-setting. Finally, protective factors are briefly discussed and the need for a structured risk assessment tool for deliberate fire-setters is canvassed. Given that research into risk and recidivism in fire-setting is underdeveloped, suggestions are made throughout the review for the focus of future research into risk factors for serial arson.

### Risk Factors for Recidivistic Arson in Adult Offenders

While the issue of offender risk assessment and management has been explored extensively for some types of offences, arsonists have been neglected in this regard, particularly in terms of specific advice for risk assessment (Gannon & Pina, 2010). Deliberate fire-setting has always been an elusive crime, difficult to detect and costing communities financially and emotionally. Studies of arson commonly rest on two assumptions: 1) that arsonists are in some way different from non-arsonists; and, 2) that repeat arson offenders are quantifiably different from one-time arson offenders (Doley, 2009). In general these suppositions have remained implicit in the research, with few empirical investigations examining their veracity or otherwise against a sound theoretical model. This paper will consider what is known about factors associated with risk of repeat (serial) fire-setting behaviour in adult offenders. For the purposes of discussion, the terms “arson” and “fire-setting” will be used interchangeably throughout although it is acknowledged that arson is a legal definition while fire-setting describes the behaviour itself.

The issue of differentiating between serial and one-time arsonists has not been well canvassed in the literature. There are inherent difficulties with this distinction oriented around the secretive nature of the offence and the difficulties in detecting and apprehending fire-setters. It seems likely that an individual’s first fire-related conviction is not likely to be their first fire offence, but we rely on self-report data, with all the limitations this implies, to lend weight to that hypothesis. Nevertheless, some factors have been found to be relevant in differentiating repeat and one-time arsonists. In discussing risk factors it is necessary to consider those issues that relate to likelihood of further fire setting as well as those that specifically concern level of harm caused by the fire (Dickens, Sugarman, Edgar *et al.*, 2009). Risk judgements for fire-setters should be based on factors incorporating recidivism likelihood as well as potential for harm, with those demonstrating high likelihood and high

potential harm to others falling into the highest risk category. This discussion will address factors traditionally associated with the likelihood of repeat fire-setting and will introduce additional concepts relevant to broadening our understanding of risk assessment of adult fire-setters.

Despite conflicting reports regarding the rate of arson recidivism among study populations, most researchers agree that adult arsonists are generally repeat offenders, but are not necessarily specialists in fire-related activity. These offenders usually have a history of engaging in a range of other crimes that are predominantly property-oriented. Estimates of arson recidivism range from 4% (Soothill & Pope, 1973) to 46% (Hurley & Monahan, 1969). Rice and Harris (1996) report 16% of their sample of 208 male fire-setters admitted to a maximum security psychiatric hospital engaged in further fire-setting on release. This is contrasted to the finding of O'Sullivan and Kelleher (1987) who reported arson recidivism in "at least 35%" of their arsonist population (p. 818). More generally, it appears that approximately 15% of arsonists have more than one conviction for fire-setting (Repo & Virkkunen, 1997a; Repo, Virkkunen, Rawlings, & Linnoila, 1997; Rix, 1994; Stewart, 1993). It is likely that differences in rates may be due to population differences with mentally disordered samples perhaps exhibiting somewhat lower rates as a result of positive response to psychotherapeutic/pharmacological interventions. However, it appears that mental disorder in and of itself is not necessarily predictive of reoffending generally (see Barnett, Richter, *et al.*, 1997). Certainly, at least one review has queried support for the notion of arsonists as dangerous recidivists (Brett, 2004) and, in general, it appears that arsonists will typically commit more than one arson offence, but that previous arson offending is not necessarily prognostic of future arson activity.

The literature on repeat fire-setting has been hampered in part by inconsistent definitions of recidivism and contrasting sources of data. Some authors have relied on

official records of crime and focused either on any fire-related offence or only on a conviction for arson in particular (i.e., Linnoila et al, 1989; Sapsford et al, 1978; Soothill & Pope, 1973) while others have incorporated other data sources such as hospital records which detail repeat fire-set episodes (O'Sullivan & Kelleher, 1987). Other authors have been less clear about their criteria for recidivism (Tennent et al, 1971). Further, there is a general lack of theory informing investigations into recidivistic fire-setting. This has resulted in a preponderance of studies comparing repeat and one-time arsonists at a purely descriptive level. As Brett (2004) commented, most of the literature is unhelpful in terms of clinical decision making for the individual client as it has tended to focus on specific populations of fire-setters and is plagued by an array of study designs culminating in a body of work that does not take into account the heterogeneous nature of the arsonist group.

Nevertheless, it is possible to extrapolate some useful information from a review of studies concerned specifically with the issue of distinguishing one-time from serial (repeat) fire-setters. The following discussion will address the core factors found to be associated with arson recidivism. Following, areas for future consideration will be examined.

*The role of risk factors and criminogenic needs relevant to general offending*

*Criminal history*

The pattern of prior criminal offending and antisocial behaviour appear to be an important consideration when evaluating risk of arson recidivism. Rice and Harris (1991) compared 145 repeat fire-setters with 98 one-time arsonists in a sample of males admitted for a fire-set episode to the maximum security division of a psychiatric institution between 1973 and 1983. Discriminant analyses revealed several variables significant in differentiating repeat from one-time arsonists. These included age (with younger offenders more likely to be repeat fire-setters), history of suicide attempts, months in correctional institutions, marital

status and history of aggression. In essence repeat fire-setters in this sample were younger with more extensive criminal histories although less likely in offences pertaining to interpersonal aggression. Dickens and colleagues (2009) reported similar findings from their file review study of 167 adult arsonists referred for forensic psychiatric assessment over a 24 year period. Each individual was categorized as a 'first time' (n = 107) or 'multiple' (n = 60) firesetter and the two groups compared on a range of variables. Repeat firesetters were distinguished by being younger, more often single, having a developmental history of violence or substance abuse, early onset of criminal convictions, lengthy prison stays, relationship problems, and more pre-convictions for property offenses than their 'first time' counterparts. These findings are consistent with those from the violence risk assessment literature, in which age at first violent offence and number of violent offences in an individual's criminal history are significant risk factors for subsequent violent offending, thereby supporting the idea that people who have already repeatedly engaged in a behaviour (whether violence or fire) are more likely to continue to do so.

Based on Dickens' and colleagues (2009) findings, Gannon & Pina (2010) suggested that general criminality may differentiate recidivist from non-recidivist arsonists. This suggestion is consistent with findings from a recent empirical study of Australian arsonists, in which it was evident that serial arsonists generally had a predilection for property-related crimes (Doley, 2009). Criminal history was examined for the sample of 88 incarcerated adult offenders with a current or prior fire-related offense history. When serial and one-time arsonists were compared, it was found significantly more serial than one-time arsonists reported involvement with property offences (97% compared to 80%), consistent with previous research (e.g., Barnett & Spitzer, 1994; Hurley & Monahan, 1969). In contrast to previous work, however, there was a stronger presence of drug and violent offences in this arson sample. Analyses revealed higher participation in drug-related and violent crimes

among arsonists compared to non-arsonists, and in property and drug-related offences among serial arsonists when compared to one-time arsonists. Doley (2009) suggested that criminal offending patterns may differ among sub-types of arson offenders, whereby fire-setting for some of the arsonists in her sample is just another anti-social act in their repertoire, while for others fire-setting *per se* has a particular function. Certainly, it is possible that specific crime-type clusters may be relevant in determining likelihood of further fire events. This notion is consistent with studies that have sought to differentiate between “pure” arsonists and others (e.g., Barnett, Richter, & Renneberg, 1999) based on history of other crimes in addition to arson. Gannon & Pina (2010) in their recent comprehensive discussion of the topic have reiterated the notion that perhaps all arsonists do not belong to one homogeneous group and that different types of people with different associated characteristics light different types of fire and thus present with different levels of risk and types of risk factors and treatment needs.

Current best-practice guidelines emphasise the importance of obtaining a thorough understanding of past criminal and antisocial behaviour. Jackson (1994), in his guidelines for the assessment of arsonists, advises the interviewer to examine the offending history of the fire-setter, particularly for evidence of a history of aggressiveness, property offences, and/or truancy from school, home or hostel (p. 119). Fineman (2003, p. 28) suggested that an arsonist’s place on the continuum of violent behaviour could best be predicted and/or more fully understood by examining the type and intensity of reinforcement that the arsonist obtains for his deviant fire acts.

#### *Mental illness and sociodemographic factors*

Repo, Virkkunen *et al.*, 1997 investigated criminality, demographic and psychiatric characteristics of repeat ( $n=223$ ) and one-time ( $n= 59$ ) fire-setters from a sample of 282



arsonists referred for pre-trial assessment. They distinguished between serial arsonists with a concurrent conviction for a non-violent offence(s) and serial arsonists with a concurrent conviction for at least one or more violent offence(s). According to the findings of this study, significantly more violent-arsonists were alcohol dependant, with a diagnosis of antisocial personality disorder and a history of suicide attempts. They tended to light their fires more often for revenge and were intoxicated during the event. Arsonists with property offences in their current conviction revealed a history of enuresis, current diagnosis of schizophrenia or borderline personality disorder. This study was innovative in its exploration of potential sub-types of serial arsonist beyond simply motive category. However, using frequency data alone it is difficult to draw any meaningful conclusions about what factors might be most salient in a prediction equation.

It is generally accepted that arsonists, like many offenders, come from disadvantaged backgrounds (Blackburn, 1993; Geller, 1987; Hollin, 1989; Inciardi, 1970; Kolko & Kazdin, 1990, 1991, 1992; Rix, 1994) and clearly, reduced life opportunities can result in a range of psychosocial disadvantages that may explain some offender's motives for crime.

Nevertheless, there is limited research linking specific employment or education variables to risk of arson recidivism. Similarly, as with many offenders, a history of social deprivation, childhood adversity including physical and/or sexual abuse, and a high rate of behavioural disorders have been reported for adult arson samples (Bland, Mezey, & Dolan, 1999; Bourget & Bradford, 1989; Heath, Hardesty, Goldfine, & Walker, 1985; Jackson, Hope, & Glass, 1987; Joukamaa & Tuovinen, 1983; Leong, 1992). Several authors highlight psychosocial deficits in arsonist samples, specifically in relation to social skills and interpersonal domains (Barker, 1994; Bradford, 1982; O'Sullivan & Kelleher, 1987; Puri, Baxter, & Cordess, 1995; Sapsford, Banks, & Smith, 1978; Vreeland & Levin, 1980) while others find arsonists are less self-confident and assertive when compared to non-arsonists (Geller, 1987; Harris & Rice,

1984; Hurley & Monahan, 1969; Inciardi, 1970; McKerracher & Dacre, 1966; Rice & Harris, 1991). However, the evidence from studies of serial arsonists is limited. The lack of differentiation among offenders, arsonists included, across these factors suggests they are less likely to be helpful as risk indicators.

In summary, the evidence for the relevance of these general factors when evaluating the specific risk of arson recidivism is limited by the lack of evidence comparing serial with one-time fire-setters. Nonetheless, given the fact that firesetters rarely engage in only arson-related offending, it seems reasonable to argue that risk factors relevant to general offending would have some place in the assessment of adult arsonists. A general recidivism tool such as the LSI-R or LS/CMI (Andrews & Bonta, 1995; Andrews, Bonta, & Wormwith, 2004) is likely to be an appropriate first step in structuring an individual risk assessment of an arson offender.

#### *Possible offence-specific risk factors*

A promising way forward for future risk protocols for serial arsonists may be to focus on offence related factors and cognitions supporting the fire-setting, in addition to the above historical and clinical variables. This approach has been adopted when considering risk assessment of other specific problem behaviours such as sex offending and stalking. Existing risk assessment tools make use of offence variables such as victim gender (STATIC-99: Hanson & Thornton, 1999), physical or psychological coercion in sexual violence (RSVP: Hart, *et al.*, 2003) previous approaches and threats to the victim (Guidelines for Stalking Assessment and Management: Kropp, Hart, & Lyon, 2008), and the nature of the prior relationship to the victim (Stalking Risk Profile: Mackenzie, *et al.*, 2009). They also specifically reference the offender's offence related cognitions in the form of 'extreme minimisation or denial of offence' (RSVP), 'elevated anger/thoughts of vengeance' (SRP)

and ‘obsessed with victim’ (SAM). Incorporating these types of risk-relevant offence specific and cognitive variables into future arson research and practice is likely to add to the information that can be gleaned from examining historical and clinical characteristics of the offender. These are aspects that have not received extensive interest in the published research to date. The following discussion will highlight a few of the key factors that could be considered in future research.

### *Offence-related behaviours and offence features*

In the few studies that have reported on specific behaviours associated with fire-setting the association between variables has rarely been considered. One exception is a re-examination of data conducted by Rice and Harris (1996). Their original study described offence features pertaining to fires of 243 arsonists in their psychiatric sample (Rice & Harris, 1991). These individuals tended to victimise with their fires people they knew and for reasons described by the authors as ‘psychotic’ or for extreme excitement/ relief of tension. In a later study using the same data set, associations between a range of offender characteristics, offence history and offence features were explored (Rice & Harris, 1996). The most significant variables associated with recidivistic fire-setting were age at first fire-setting (younger being more likely to reoffend), past history of fire-setting (the more fires set previously, the more likely to reoffend), lower intelligence and less likely to have a history of aggression. In terms of offence variables, there were only two that made a statistically significant contribution to the prediction equation: fire-setting alone and having no concurrent criminal charge for fire-setting. Other studies have looked at co-occurrence of offence characteristics but failed to differentiate between serial and one-time arsonists (i.e., Sapp *et al.*, (1994). This research has tended to be exploratory and descriptive in nature and not based on any specific theoretical framework.

In her Australian-based study, Doley (2009) examined the offence features of serial and one-time arsonists but found few meaningful differences. Where statistical significance was found the pattern of results appear to support the notion of excitement as a reinforcer of serial fire-setting. For instance, fewer serial arsonists identified a specific trigger to their fire-setting and more remained at the scene to watch the aftermath. Frequency data (although the differences were non-significant) also suggested that more serial arsonists lit fires for excitement, in the presence of witnesses (rather than co-offenders), and alerted authorities, as well as lit fires that caused more damage. Overall, the pattern of results suggested that the fires of one-time arsonists appeared more targeted or instrumental and less emotive than those of serial offenders. For example, more one-time arsonists knew the victim of the attack, identified a specific trigger for the fire, lit fires of greater magnitude (used accelerant, multiple seats of ignition and items ignited), and more committed their fire-setting offences with others (not in secret, alone).

#### *Offence-related emotional states*

While most research has focused on observable behaviours prior to, during or following the fire event some arson researchers have asked about the offender's emotional reactions temporally close to the fire-setting episode (Harmon, Rosner, & Wiederlight, 1985; Leong & Silva, 1999). Coid *et al.* (1999), in their study of self-mutilating prisoners for example, provide a list of emotions associated with fire-setting while another notable account is the vivid description of the cognitions, emotions and behaviours associated with serial arson provided by Orr (1989a, 1989b), an author who was subsequently revealed to be a long-serving fire investigator with an extensive history of arson offences (Wambaugh, 2003). In the authors' experience feelings of excitement and a fascination with the flames and the

trappings of fire (emergency services attending, people watching in awe) are frequently reported by arsonists, and these feelings may be relived after the fire, when the scene is revisited and fantasies about the fire are recreated. Feeling excited at the time of fire-lighting, and depressed or deflated afterwards, suggests that for serial arsonists there is a strong emotional component to promoting and maintaining the behaviour. The elation experienced at the time of fire-lighting may be sufficiently positively reinforcing to ensure the behaviour continues.

Preliminary research suggests that the presence of specific emotional states may offer a promising way forward for arson risk assessment. When emotions reported post fire-setting were examined by Doley (2009), frequency data revealed some differences between serial and one-time arsonists across the range of emotions (although this trend was not statistically significant). The fire-setting of recidivist arsonists appeared to involve a more highly emotive and reckless element than the fire-setting of one-time arsonists. That is, more one-time arsonists reported feeling worried about the consequences of their fire-setting (being caught, causing damage to property, potentially endangering lives while serial arsonists reported feeling excited, relieved, and/or not concerned immediately following their fires.

Specific emotional states have also been incorporated into some of the motivational categorisation proposed for firesetters. For example, the National Centre for the Analysis of Violent Crime (NCAVC; 1992) classifies motives for arson into six major categories. One of the categories, excitement, is consistent with Fineman's (1995) dynamic-behavioural typology Category 6 that describes the severely disturbed fire-setter. In that category Fineman focuses on those fire-setters who obtain significant sensory reinforcement (i.e., excitement generated vis-à-vis fire-setting) through sensation-seeking. This factor may be quite powerful and may interact with other motivational variables. Strong biochemical factors may help reinforce aspects of the excitement motive. These biochemical reinforcers

may also reinforce aspects of the sensory reinforcement quality described in Fineman's dynamic-behavioural typology.

Douglas *et al.*, (1992) included thrill seekers, attention seekers, recognition seekers, and those with sexual perversions into this "excitement" category. They feel that identifying the subtype of excitement-motivated arsonist is especially valuable. Fineman's (1995) Category 6, with specific reference to sensory reinforcement, would include the FBI categories that focus upon thrill seeking, attention seeking, and fire-setting for the purpose of receiving sexual or sensual reinforcement. However, Fineman's dynamic-behavioural categories would differ from the FBI categories with regard to recognition seekers whom Fineman would perceive as receiving less sensory reinforcement for their fire-setting and more cognitive reinforcement in the sense of perceiving themselves to be exceptionally empowered and in control, as a function of their fire-set.

Fineman (1995) posits three reinforcement situations that help one understand the reinforcement process in fire-setting. As applied to sensory (emotional) reinforcement, the first refers to the reinforcement that may occur when a fire-setter looks at and is reinforced by the flame itself, and what the flame does. The second reinforcement situation occurs as a function of the specific target that is set on fire. The third situation looks at the reinforcement that is obtained from the chaos that ensues from a fire-set vis-à-vis the confluence of all the protective agencies coming together to control and put the fire out. Both the first and third situations noted above can generate significant sensory reinforcement (e.g., excitement) in the fire-setter. Those situations may be perceived by the arsonist not only at a sensory level, but also at a cognitive level relative to the feeling of power and control.

The other emotion often associated with deliberate fire-setting is boredom, or more specifically, relief of boredom. Dickens and colleagues (2009) found that recidivist fire-

setters experienced a perceived physiological change such as excitement or anxiety during the time of their fire-setting. Similarly, volunteer firefighters who have disclosed their history of arson, and those who have been convicted of arson, have frequently spoken about boredom being a motive for their fires (Doley & Fineman, in press). Zuckerman (2007, p. 83), when talking about boredom susceptibility and the monotony of long distance driving, states that monotonous conditions are particularly aversive to high sensation seekers. A reasonable hypothesis may be that some fire-setters who become arsonists are high sensation seekers and perhaps are exceptionally susceptible to boredom. It would be of interest, especially with the adult arsonist to determine the level of boredom within their job, vocational training or general environment. If in fact some arsonists do set fires to obtain physiological arousal or relieve boredom, it is unclear why they are so willing to risk their own personal safety and that of the community to relieve that boredom. It is possible that an arsonist may not perceive safety to the community to be a realistic risk if he feels significantly empowered and in control of an illegal fire-set. There appears to be an interaction between sensory reinforcement and the power motive when setting some illegal fires.

This hypothesis is consistent with Jackson, Glass, and Hope's (1987) functional analytic model. Here they postulated that it was the sense of mastery and control an arsonist achieves through their fire-setting behaviour that contributes to maintaining involvement in deliberate fire-setting. This notion was subsequently refined and three processes hypothesised to support and drive recidivist fire-setting were presented (Jackson, 1994). These include an attempt to relive the emotional experience involved in fire-setting; an "addiction" based on an intermittent reinforcement effect, and; an "addiction" based on the positive short-term consequences associated with fire-setting despite the longer-term negative consequences. One of the difficulties we face is that any discussion of risk factors is hampered by a lack of empirical data and this is true for the functional-analytic model of fire-setting as well. Of the

empirical work available, much of it has been exploratory in nature and lacking a theoretical basis. While largely untested, the functional-analytic model does draw attention to likely processes relevant to a discussion of risk. Specifically, it is postulated that a core element of criminal behaviour is the experience of committing a crime (Hodge, 1992). Jackson (1994) asks, “could it be therefore that arson also progresses to a point where it is the experience rather than the event which is of central importance?” (p. 116), and highlights the relevance of the emotional states associated with fire-setting, particularly to adult arsonists with a more extensive fire-setting career.

Jackson also explains the typical fire-setters progression from lighting fires with peers to lighting fires alone by suggesting that an important function of fire-setting initially, may be for the arsonist to gain recognition for their fire-setting efforts. As the evidence mounts and the pressure of likely detection increases, the arsonist will seek to avoid detection by more often lighting fires secretly and alone. However, this can effectively reduce the level of personal recognition they achieve from their fire-setting, resulting in escalating magnitude of fire-setting activity – both in terms of size of the blaze and potential harmful effects of the fire (i.e., lives endangered). A third process highlighted in the model arises from the notion that fire-setting represents a dysfunctional means of exerting control over what seems to be an otherwise uncontrollable environment that the fire-setter finds themselves in. Here the potential immediate short-term benefits to the arsonist (such as peer admiration) are acknowledged along with the reality that over the longer-term that same behaviour could result in negative consequences (such as peer rejection once the cohort matures). Ultimately, the arsonist experiences a further impairment of their environment, leading to the “addiction” to fire-setting as they attempt to exert control in an increasingly impoverished social experience.



Findings from Dickens and colleagues (2009) study, however, cast some doubt about the importance of emotions in repeat fire-setting. Dickens, Sugarman *et al.*, (2009) examined differences between repeat and one-time fire-setters across a range of variables using data amassed over a 24-year period. It was found that while feelings of excitement and tension were evident more frequently in the repeat fire-setter group, overall it was not a common feature for this sample. Consistent with previous research, repeat fire-setters were younger, more criminally experienced, evidenced a range of psycho-social disadvantages in their background and were more likely than one-time arsonists to have a diagnosed personality disorder (but not a psychiatric illness). Given this research was conducted using file review, it is possible that the acute and highly clinical nature of emotional states associated with offending were not routinely recorded, leading to low prevalence. It would be useful to conduct prospective research in which emotions at the time of the offence were specifically investigated and contrasted between single and repeat firesetters. If they can be shown to differentiate between the two groups, psychological interventions targeting offence-related emotional states may be a useful method of risk management and treatment.

#### *Offence-related cognition*

Like the role of emotion, the role of cognition in fire-setting has received relatively little attention in the arson literature. Some authors have considered the indirect contribution of a range of cognitive factors by examining characteristics such as impulsivity, poor assertiveness and communication skills, low self-esteem, and difficulties problem solving (see Gannon & Pina, 2010 for review). Yet these types of deficits are common to most offenders and their direct relationship to fire-setting remains unclear. Rather than examining offence-specific cognitions, the focus in the literature has been on identifying motives for deliberate fire-setting, and the development of motive-based typologies. Yet motives remain an unreliable indicator of intent or cognitive process as they require the offender to

understand and be able to articulate their reasons for setting the fire. Some arsonist sub-groups tend to be less willing or able to provide this information – for instance we know very little about fire-fighters who commit acts of arson because once apprehended, traditionally they have refused to provide a solid account of their fire-setting (Doley & Fineman, in press). Similarly, given that there appears to be some relationship between deliberate fire-setting and intellectual disability, it is unclear whether a significant proportion of firesetters would have the verbal skills to articulate something as complex as offending motivation (Devapriam, Raju, Singh, Collacott, & Bhaumik, 2007). Even if motive could be accurately inferred from behaviour rather than self-report, it is of limited value to risk assessment unless specific motivational types can be shown to be more or less likely to reoffend.

A potentially more informative way of considering the role of cognitive factors in offending and risk assessment is that adopted in the relatively well advanced sex offender and violent offender literature. Attitudes during treatment, core beliefs associated with the offending behaviour, and empathy are identified as significant factors in considering the risk of recidivism of violent offenders, with negative attitudes and poor engagement in treatment linked to increased recidivism (Andrews & Bonta, 2006; Polaschek, Collie, & Walkey, 2004). Deficits in social perception and empathy, as well as cognitive distortions have been highlighted as pertinent factors in risk assessment of sex offenders (Blake & Gannon, 2010). These are not aspects that have been specifically addressed in the arson literature, which has concentrated predominantly on physical actions that have been found to be temporally close to the fire-setting behaviour or on post-hoc justifications offered by offenders for their fire-setting acts.

Empathy may be considered the ability of an individual to identify with another person, usually referring to their ability to understand and identify with the experience of a victim of the offence in question. As Blake and Gannon (2010) recently pointed out, efforts

to define empathy in the psychological literature are not as straight forward as one might expect. In order to effectively operationalise (and thus be able to measure) the concept Blake and Gannon suggest both the cognitive as well as the affective components of the concept need to be addressed. One of the features of fire-setting is that an individual who is generally disenfranchised and on the edges of society can make a powerful statement using fire. Frequently, the victim of fire-setting is removed from the actual offence. Fire-setters focus on the trappings accompanying fire-setting and, sometimes (but not always) on the blaze itself. Doley's (2009) study revealed arsonists report they are in control of themselves at the time they light the fire and they understand the likely consequences of their actions, but choose to proceed regardless. The presence and role of general or specific empathy deficits in this process in unclear and warrants further investigation.

Several authors have also noted the prevalence of underlying aggressive motives for arson, including revenge or jealousy (Bourget & Bradford, 1989; Bradford, 1982; Coid, Wilkins, & Coid, 1999; Koson & Dvoskin, 1982; Prins, Tennent, & Trick, 1985; Rice & Harris, 1991; Ritchie & Huff, 1999; Stewart, 1993; Tennent, McQuaid, Loughnane, & Hands, 1971). Revenge often follows from a sense of injustice, that is, feeling wrongly offended against. Maladaptive vengeance is a concept closely aligned to the idea of narcissistic rage, which has been identified as a specific form of aggression arising from a perceived injury to one's sense of self or self-concept (Bushman & Baumeister, 1998; Horney, 1948; Kohut, 1972). According to Gabriel and Monaco (1994), maladaptive vengeance is a compulsive desire to get even which becomes an overriding and all-consuming force in the individual, resulting in dangerous or harmful behaviours expressed towards others or the self (p. 167). Certainly, if it is assumed that serial arsonists have a high fascination with fire to start with, it is perhaps not a significant stretch of the imagination to suppose that fire would come naturally to them as a tool for maladaptive vengeance. As noted by Arlow (1978) for

someone seeking vengeance “as a destructive, attention-compelling spectacle, fire is a particularly suitable vehicle for this purpose” (p. 24). Jackson (1994) also identifies perceived injustice along with low self-concept as likely internal states experienced by the arsonist. Doley’s (2009) sample revealed no significant difference across the three offender groups (serial arsonist, one-time arsonist, non-arsonist) on a measure of sensitivity to befallen injustice. Doley suggests that as the instrument is not designed for offender populations, it is possible that the negative consequences depicted were not salient to an offender’s perception of social justice. The high rate of revenge-motives identified in arson samples generally suggests an investigation of arsonists’ perceptions of social rules and the types of core beliefs they hold about injustice may be a useful avenue for both risk assessment and treatment research.

One way of investigating these types of cognitive processes is through examination of offence-relevant core beliefs, or implicit theories, and relevant cognitive distortions. Implicit theories have been described by Polaschek and Ward (2002) as ways of individuals organising and making sense of their own behaviour and that of others around them. These frameworks are thought to be acquired in childhood and modified during the life course in response to individual experience. This concept has been applied to violent offenders and sex offenders as possibly key to understanding the cognitions driving offence-specific behaviour (Blake & Gannon, 2010). This is an area that potentially has significant applicability to fire-setters, and especially to bushfire arsonists. A unique feature of fire is frequently it involves a range of factors that mean the ultimate end-result is beyond the offender’s control. Aspects such as environmental conditions and presence of unseen combustible materials can impact on both the size and intensity of the blaze. It is relatively easy perhaps for an arsonist to attribute responsibility for subsequent devastation wrought by a blaze to factors ‘beyond their control’. Understanding more clearly the offence-supportive cognitions involved in

maintaining fire-setting is a priority for future research. We know something about why a generally disenfranchised and under-confident individual might choose an inherently powerful tool such as fire to make their mark on their environment. We know less about why some of these individuals desist while for others the pattern of fire-setting intensifies both in terms of frequency as well as dangerousness and magnitude of blaze.

*Structured risk assessment of firesetters*

The development of a method for the assessment of adult fire-setting recidivism would be of great benefit to both mental health professionals tasked with assessing and managing firesetters, and to criminal justice personnel tasked with sentencing. To date there have been no extensive evaluations of instruments that might be used to assess the risk of recidivistic fire-setting. This is probably because there are so few instruments that attempt to deal with this complex issue. Gannon and Pina (2010) note, for example, that Fineman (1995) provides a fairly comprehensive checklist of risk factors based on his dynamic-behavioral conceptualization, many of which have been identified in the developing literature regarding child and adolescent fire-setting. However, they accurately state that while the list is face valid, the application of these items to adult fire-setters has not been empirically tested, nor have their predictive relationship to repeat fire-setting. Gannon and Pina also consider the use of the HCR-20 (Webster, Douglas, Eaves, & Hart, 1997) as a structured clinical guide for predicting future fire-setting, concluding that it may be appropriate for those arsonists whose fire-setting “appears to stem from intentions relating to violence and / or is embedded within a plethora of other violent criminal actions (p.233).” Nonetheless, the validity of using the HCR-20 for this purpose is unknown and the assumption that the HCR-20 would not be valid for other forms of deliberate fire-setting is untested. Developing a tool specific to risk assessment of firesetters is a complex task, as such a tool must combine the variety of known or suspected risk factors into a format that can, with relative ease, be used to generate risk

judgements about likelihood of further fire-setting and a formulation that can be used to guide risk management and treatment.

Fineman, Patterson and Godwin (2010) have been developing such an assessment instrument using the dynamic-behavioural formulation (Fineman, 1995) as a guideline. Their goal is to predict arson recidivism as well as the likelihood of other maladaptive acting out. As Doley (2009) notes, those who deliberately set fires may specialise in arson (a serial arsonist), or arson may be one of numerous problem behaviours engaged in over time. Using Fineman, Patterson & Godwin's instrument to assess the potential for future maladaptive behaviour, the arsonist is rated on a 3 point scale concerning his place on the normal-problematic continuum across a range of areas. The instrument examines vocational issues (i.e., has a job, wants a job, is satisfied with his job), peer issues (i.e., social skills), interpersonal issues (i.e., empathy, compassion, self-esteem), behavioural issues (i.e., other criminal activity, property or person-focused issues), family issues (i.e., problematic family of origin, unstable current family) and substance issues. The arsonist is also rated on specific fire related behaviours (past and current) with regard to fire history, sensory reinforcement from fire, urges to light matches/lighters/fires, fire-setting frequency, target of fire-set, fire used as a weapon, and reaction to fire-start. The development of this assessment tool reflects the development of knowledge in the wider risk assessment field and brings the structured professional judgement approach to the field of arson. The reliability and validity of this tool is the subject of ongoing research.

#### *Protective factors*

There is considerable scope for further development of the literature on risk assessment of adult firesetters. While the identification of risk factors for recidivistic fire-setting is in its infancy, investigation of possible protective factors has barely been considered

in a research setting. The role of protective factors for arsonists in clinical practice are discussed elsewhere in this issue (see [Dolan \*et al.\*, 2010](#) and [Fritzon \*et al.\*, 2010](#); this edition) and accordingly here it is sufficient to simply highlight the importance of including consideration of these variables as part of a comprehensive risk assessment. Protective factors have been shown to add incrementally to the value of structured risk judgements using tools such as the Structured Assessment of Violence Risk in Youth (Borum, Bartel, & Forth, 2006; Rennie & Dolan, 2010) and the START (Webster, Martin, Brink, Nicholls, & Middleton, 2004). Fineman, Patterson & Godwin (2010) argue that protective factors may diminish the concern that one may have about the likelihood of continued fire-setting, and may also provide information on the likelihood of a positive response to treatment for fire-setting. Given the lack of specific treatment options for adult firesetters at present, identifying factors that will improve responses may seem premature, however it will be important to consider possible protective factors as risk assessment tools are developed so subsequent treatment programs also attend to these issues.

### *Conclusion*

Both research and clinical experience would suggest that a prolonged and sustained interest in fire and its trappings, previous detected and undetected fire-sets, substance abuse and younger age are likely to be risk factors for repeat fire-setting. Other avenues that may be of clinical use have less research support but appear face valid and warrant investigation. Emotion experienced temporally close to the fire-setting, that is, immediately preceding, during and immediately after the fire event appear important, as do some offence-specific behaviours, including fires set by the offender when alone and fire-setting with no specific trigger identified. Factors found to be pertinent to risk assessment and management for other crime-types are likely to be relevant to arson, including cognition, social perception and empathy, although this too requires investigation and substantiation. This review makes clear

that the risk assessment literature relevant to deliberate fire-setting is woefully underdeveloped, particularly considering the amount of damage this behaviour causes.

One possible reason for this is that true rates of deliberate fire-setting are poorly ascertained. It is well accepted that crime statistics are an underrepresentation of actual criminal activity. This is true also for arson where the secretive nature of the crime and the difficulties in detection, apprehension and conviction mean many more fire-setters go undetected than are actually seen in our judicial system. Even amongst those offenders who are assessed as part of sentencing or during incarceration, only those individuals whose fire-setting is so blatant as to be unmistakeable are identified. Given the fact that firesetters rarely only engage in arson-related offences, it behoves all practitioners to include at least a question or two investigating possible fire-setting predilection when conducting psychological or psychiatric assessments on individuals demonstrating cognitive and/or mental health deficits and/or general criminal behaviour.

To advance knowledge and practice with this group of offenders, large scale, well designed research is clearly required. This includes both more retrospective studies of identified firesetters from both clinical and purely forensic settings, and the gold-standard in risk assessment research, true prospective studies in which offenders are followed-up over time to determine reoffending rates. This type of research is difficult, particularly given the low detection and prosecution rates for arson, but is necessary if we are to develop an evidence base to inform decision making about the treatment and management of this maligned and potentially highly destructive group of offenders.

### *References*



- Andrews, D. A., & Bonta, J. (1995). *Level of Service Inventory-Revised*. Toronto, ON: Multi-Health Systems.
- Andrews, D. A., & Bonta, J. (2006). *The psychology of criminal conduct* (4th ed. ed.). New York, NY: LexisNexis Matthew Bender
- Andrews, D. A., Bonta, J., & Wormwith, S. (2004). *The Level of Service/Case Management Inventory (LS/CMI)*. Toronto, ON, Canada: Multi-Health Systems.
- Arlow, J. (1978). Pyromania and the primal scene: A psychoanalytic comment on the work of Yukio Mishima. *Psychoanalytic Quarterly*, 47, 24-51.
- Barker, A. (1994). Arson: A review of the psychiatric literature. *Maudsley Monographs*, 35, 110.
- Barnett, W., & Spitzer, M. (1994). Pathological fire-setting 1951-1991: A review. *Medicine, Science, and Law*, 34, 4-20.
- Barnett, W., Richter, P., & Renneberg, B. (1999). Repeated arson: Data from criminal records. *Forensic Science International*, 101, 49-54.
- Barnett, W., Richter, P., Sigmund, D., & Spitzer, M. (1997). Recidivism and concomitant criminality in pathological firesetters. *Journal of Forensic Science*, 42, 879-883.
- Blackburn, R. (1993). *The psychology of criminal conduct*. Chichester: John Wiley & Sons.
- Blake, E., & Gannon, T. (2010). Social perception deficits, cognitive distortions, and empathy deficits in sex offenders: A brief review. *Trauma, Violence and Abuse*, 9, 34-55.
- Bland, J., Mezey, G., & Dolan, B. (1999). Special women, special needs: A descriptive study of female Special Hospital patients. *The Journal of Forensic Psychiatry*, 10, 34-45.
- Borum, R., Bartel, P., & Forth, A. (2006). *Manual for the Structured Assessment for Violence Risk in Youth (SAVRY)*. Odessa, FL: Psychological Assessment Resources.
- Bourget, D., & Bradford, J. (1989). Female arsonists: A clinical study. *Bulletin of the American Academy of Psychiatry and Law*, 17, 293-300.
- Bradford, J. (1982). Arson: A clinical study. *Canadian Journal of Psychiatry*, 27, 188-193.
- Brett, A. (2004). "Kindling theory" in arson: How dangerous are firesetters? *Australian and New Zealand Journal of Psychiatry*, 38, 419-425.
- Bushman, B., & Baumeister, R. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology*, 75, 219-229.
- Coid, J., Wilkins, J., & Coid, B. (1999). Fire-setting, pyromania and self-mutilation in female remanded prisoners. *The Journal of Forensic Psychiatry*, 10, 119-130.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44, 113-126.
- Devapriam, J., Raju, L. B., Singh, N., Collacott, R., & Bhaumik, S. (2007). Arson: Characteristics and predisposing factors in offenders with intellectual disabilities. *The British Journal of Forensic Practice*, 9, 23-27.
- Dickens, G., Sugarman, P., Edgar, S., Hofberg, K., Tewari, S., & Ahmad, F. (2009). Recidivism and dangerousness in arsonists. *Journal of Forensic Psychiatry & Psychology*, 20, 621-639.
- Doley, R. (2009). *A snapshot of serial arson in Australia*. Saarbrücken: Lambert Academic Publishing.
- Doley, R., & Fineman, K. (2010). Firefighter arson. In G. Dickens, P. Sugarman, & T. Gannon (eds.), *Arson and mental health: Theory, research and practice*. RCPsych Pubs. Manuscript in preparation.
- Douglas, J., Burgess, A., Burgess, A., & Ressler, R. (1993). *Crime Classification Manual*. London: Simon & Schuster.
- Fineman, K. R. (2003). Arson/Arsonists. In *Encyclopedia of Murder and Violent Crime* (ed E.W. Hickey), pp. 26-32. Thousand Oaks, CA: Sage.
- Fineman, K.R. (1995). A model for the qualitative analysis of child and adult fire deviant behavior. *American Journal of Forensic Psychology*, 13(1), 31-60.
- Fineman, K.R., Patterson, B., & Godwin, D.C.

- Gabriel, M., & Monaco, G. (1994). "Getting even": Clinical considerations of adaptive and maladaptive vengeance. *Clinical Social Work Journal*, 22, 165-178.
- Gannon, T. A., & Pina, A. (2010). Fire-setting: Psychopathology, theory and treatment. *Aggression and Violent Behavior*, 15, 224-238.
- Geller, J. (1987). Fire-setting in the adult psychiatric population. *Hospital and Community Psychiatry*, 38, 501-506.
- Geller, J. (1997). Self-incineration. A review of the psychopathology of setting oneself afire. *International Journal of Law and Psychiatry*, 20, 355-372.
- Hanson, K., & Thornton, D. (1999). *STATIC-99*. Ottawa: Solicitor General of Canada.
- Harmon, R., Rosner, R., & Wiederlight, M. (1985). Women and arson: A demographic study. *Journal of Forensic Sciences*, 30, 467-477.
- Harris, G., & Rice, M. (1984). Mentally disordered firesetters: Psychodynamic versus empirical approaches. *International Journal of Law and Psychiatry*, 7, 19-34.
- Hart, S. D., Kropp, R. P., Laws, D. R., Klaver, J., Logan, C., & Watt, K. A. (2003). *The Risk for Sexual Violence Protocol (RSVP): Structured professional guidelines for assessing risk of sexual violence*. Burnaby, BC: Mental health, Law and Policy Institute, Simon Fraser University.
- Heath, G., Hardesty, V., Goldfine, P., & Walker, A. (1985). Diagnosis and childhood fire-setting. *Journal of Clinical Psychology*, 41, 571-575.
- Hodge, J. (1992). Addiction to violence: A new model of psychopathy. *Criminal Behaviour and Mental Health*, 2, 212-223.
- Hollin, C. (1989). *Psychology and crime*. London: Routledge.
- Horney, K. (1948). The value of vindictiveness. *American Journal of Psychoanalysis*, 8, 3-12.
- Hurley, W., & Monahan, T. (1969). Arson: The criminal and the crime. *The British Journal of Criminology*, 9, 4-21.
- Inciardi, J. (1970). The adult firesetter: A typology. *Criminology*, 145-155.
- Jackson, H. (1994). Assessment of fire-setters. In M. McMurran & J. Hodge (Eds.) *The assessment of criminal behaviours of clients in secure settings*. (pp. 94-126). London: Jessica Kingsley Publishers.
- Jackson, H., Glass, C., & Hope, S. (1987). A functional analysis of recidivistic arson. *British Journal of Clinical Psychology*, 26, 175-185.
- Jackson, H., Hope, S., & Glass, C. (1987). Why are arsonists not violent offenders? *International Journal of Offender Therapy and Comparative Criminology*, 31, 143-151.
- Joukamaa, M., & Tuovinen, M. (1983). Finnish Arsonists. *Journal of the Forensic Science Society*, 23, 172-173.
- Kohut, H. (1972). Thoughts on narcissism and narcissistic rage. *The Psychoanalytic Study of the Child*, 27, 360-400.
- Kolko, D., & Kazdin, A. (1990). Matchplay and fire-setting in children: Relationship to parent, marital, and family dysfunction. *Journal of Clinical Child Psychology*, 19, 229-238.
- Kolko, D., & Kazdin, A. (1991). Aggression and psychopathology in matchplaying and fire-setting children: A replication and extension. *Journal of Clinical Child Psychology*, 20, 191-201.
- Kolko, D., & Kazdin, A. (1992). The emergence and recurrence of child fire-setting: A one-year prospective study. *Journal of Abnormal Child Psychology*, 20, 17-37.
- Koson, D., & Dvoskin, J. (1982). Arson: A diagnostic study. *Bulletin of the AAPL*, 10, 39-49.
- Kropp, R. P., Hart, S. D., & Lyon, D. R. (2008). *Guidelines for stalking assessment and management (SAM)*. Vancouver, BC: ProActive Resolutions Inc.
- Leong, G. (1992). A psychiatric study of persons charged with arson. *Journal of Forensic Sciences*, 37, 1319-1326.
- Leong, G., & Silva, J. (1999). Revisiting arson from an outpatient forensic perspective. *Journal of Forensic Science*, 44, 558-563.
- Lerner, E. (1965). Evaluation of performance as a function of performer's reward and attractiveness. *Journal of Personality and Social Psychology*, 1, 355-360.
- Linnoila, M., De Jong, J., & Virkkunen, M. (1989). Family history of alcoholism in violent offenders and impulsive fire setters. *Archives of General Psychiatry*, 46, 613-616.

- Mackenzie, R. D., McEwan, T. E., Pathé, M. T., James, D. V., Ogloff, J. R. P., & Mullen, P. E. (2009). *Stalking risk profile: Guidelines for assessing and managing stalkers*. Melbourne: StalkInc. & Centre for Forensic Behavioural Science, Monash University.
- McKerracher, D., & Dacre, A. (1966). A study of arsonists in a special security hospital. *British Journal of Psychiatry*, 112, 1151-1154.
- Orr, J. (1989a). Profiles in arson: The revenge firesetter. *American Fire Journal*, 30-32, 37-38.
- Orr, J. (1989b). Profiles in arson: The serial firesetter. *American Fire Journal*, 24-27, 32-33.
- O'Sullivan, G., & Kelleher, M. (1987). A study of firesetters in the South-West of Ireland. *British Journal of Psychiatry*, 151, 818-823.
- Perrin-Wallqvist, R., & Norlander, T. (2003). Fire-setting and playing with fire during childhood and adolescence: Interview studies of 18-year-old male draftees and 18-19-year-old female pupils. *Legal and Criminological Psychology*, 8, 151-157.
- Polaschek, D. L., & Ward, T. (2002). The implicit theories of potential rapists. What our questionnaires tell us. *Aggression and Violent Behavior*, 7, 385-406.
- Polaschek, D. L., Collie, R. M., & Walkey, F. H. (2004). Criminal attitudes to violence: Development and preliminary validation of a scale for male prisoners. *Aggressive Behavior*, 30, 484-503.
- Prins, H., Tennent, G., & Trick, K. (1985). Motives for arson (fire raising). *Medicine, Science and Law*, 25, 275-278.
- Puri, B., Baxter, R., & Cordess, C. (1995). Characteristics of firesetters: A study and proposed multi-axial psychiatric classification. *British Journal of Psychiatry*, 166, 393-396.
- Rennie, C. E., & Dolan, M. C. (2010). The significance of protective factors in the assessment of risk. *Criminal Behaviour and Mental Health*, 20, 8-22.
- Repo, E., Virkkunen, M., Rawlings, R., & Linnoila, M. (1997). Criminal and psychiatric histories of Finnish arsonists. *Acta Psychiatrica Scandinavica*, 95, 318-323.
- Rice, M., & Harris, G. (1991). Firesetters admitted to a maximum security psychiatric institution. *Journal of Interpersonal Violence*, 6, 461-475.
- Rice, M., & Harris, G. (1996). Predicting the recidivism of mentally disordered firesetters. *Journal of Interpersonal Violence*, 11, 364-375.
- Ritchie, E., & Huff, T. (1999). Psychiatric aspects of arsonists. *Journal of Forensic Science*, 44, 733-740.
- Rix, K. (1994). A psychiatric study of adult arsonists. *Medicine Science and Law*, 34, 21-34.
- Sapp, A., Huff, T., Gary, G., Icov, D., & Horbert, P. (1994). *A report of essential findings from a study of serial arsonists*. Washington, D.C.: National Center for the Analysis of Violent Crime, Federal Bureau of Investigation.
- Sapsford, R., Banks, C., & Smith, D. (1978). Arsonists in prison. *Journal of Medicine, Science and Law*, 18, 247-254.
- Schmitt, M. (1996). Individual differences in sensitivity to befallen injustice (SBI). *Personality and Individual Differences*, 21, 3-20.
- Schmitt, M., Neumann, R., & Montada, L. (1995). Dispositional sensitivity to befallen injustice. *Social Justice Research*, 8, 385-407.
- Soothill, K., & Pope, P. (1973). Arson: A twenty-year cohort study. *Medicine, Science and the Law*, 13, 127-138.
- Stewart, L. (1993). Profile of female firesetters: Implications for treatment. *British Journal of Psychiatry*, 163, 248-256.
- Tennent, T., McQuaid, A., Loughnane, T., & Hands, A. (1971). Female arsonists. *British Journal of Psychiatry*, 119, 497-502.
- Vreeland, R., & Levin, B. (1980). Psychological aspects of fire-setting. In D. Canter (Ed.), *Fires and Human Behaviour* (1st ed., pp. 31-46). London: David Fulton.
- Wambaugh, J. (2003). Fire lover. *Australian Reader's Digest*, March, 136-151.
- Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). *HCR-20: Assessing risk for violence* (2nd ed.). Burnaby, BC: Simon Fraser University.

Webster, C. D., Martin, M.-L., Brink, J., Nicholls, T. L., & Middleton, C. (2004). *Short-term assessment of risk and treatability (START)*. Hamilton, ON: St Joseph's Healthcare and Forensic Psychiatric Services Commission.